IN THE CLAIMS:

1. (Original) A method for programming a pattern matching engine having a plurality of information storage entries with one or more regular expressions, each regular expression including a plurality of characters and having a corresponding action to be applied to matching strings, the method comprising the steps of:

identifying one or more borders within a given regular expression, the one or more borders separating the given regular expression into a plurality of sub-expressions, at least one sub-expression having a plurality of sequential characters; and

loading one or more entries of the pattern matching engine with a plurality of the sequential characters from at least one sub-expression, wherein

the borders are defined by a predetermined sequence of regular expression metacharacters.

2. (Original) The method of claim 1 wherein the predetermined sequence of regular expression metacharacters are a wildcard metacharacter followed immediately by a repeat last character zero, one or more times metacharacter.

3. (Original) The method of claim 1 further comprising the step of organizing at least part of the pattern matching engine into a plurality of sections, and wherein each section of the pattern matching engine is loaded with a plurality of search patterns for a corresponding sub-expression.

4. (Original) The method of claim 3 wherein the entries of a given section are loaded with one of a search pattern that includes a complete match of the respective sub-expression, a search pattern that includes a partial match of the respective sub-expression, and a mismatch pattern.

1   5. (Original) The method of claim 4 further comprising the steps of:

2   associating at least one sub-expression with a current state variable; and

3   loading the associated current state variable into each entry of the section of the

4   pattern matching engine that contains the at least one sub-expression.

1   6. (Original) The method of claim 5 wherein the pattern matching engine has at

2   least one content addressable memory (CAM) loaded with the one or more regular ex-

3   pressions.

1   7. (Original) The method of claim 6 wherein

2   the CAM is a ternary content addressable memory (TCAM) that supports don't

3   care values, and

4   the mismatch pattern includes all don't care values.

1   8. (Currently amended) The method of claim 7 wherein

2   each regular expression is associated with an action,

3   the pattern matching engine further includes a second memory device having a

4   plurality of entries, and

5   the entries of the second memory device are loaded with the actions associated

6   with the one or more regular expressions.

1   9. (Original) The method of claim 8 wherein each entry of the TCAM identifies a

2   corresponding entry of the second memory device.

1   10. (Original) The method of claim 9 wherein at least one TCAM entry is associ-

2   ated with a next state variable, the method further comprising the step of loading the en-

3   try of the second memory device that is identified by the at least one TCAM entry with

4   the associated next state variable.

1   11. (Original) The method of claim 10 wherein

2   the at least one TCAM entry is located in a TCAM section whose entries are as-

3   sociated with a current state variable having a first value, and

4   the next state variable has a second value that differs from the first value, thereby

5   specifying a new TCAM section to be searched.

1   12. (Original) The method of claim 11 wherein each TCAM entry has a match

2   cell that contains the complete match, the partial match or the mismatch pattern.

1   Claims 13-20. (Canceled)

1   21. (New) The method of claim 1 wherein

2   each regular expression is associated with an action,

3   the pattern matching engine further includes a second memory device having a

4   plurality of entries, and

5   the entries of the second memory device are loaded with the actions associated

6   with the one or more regular expressions.

1   22. (New) The method of claim 21 wherein

2   the pattern matching engine has at least one ternary content addressable memory

3   (TCAM) that supports don't care values, the TCAM loaded with the one or more regular

4   expressions, and

5   each entry of the TCAM identifies a corresponding entry of the second memory

6   device.

1   23. (New) The method of claim 22 wherein at least one TCAM entry is associated

2   with a next state variable, the method further comprising the step of loading the entry of

3   the second memory device that is identified by the at least one TCAM entry with the as-

4   sociated next state variable.

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1   24. (New) The method of claim 23 wherein

2   the at least one TCAM entry is located in a TCAM section whose entries are as-

3 sociated with a current state variable having a first value, and

4   the next state variable has a second value that differs from the first value, thereby

5 specifying a new TCAM section to be searched.

1   25. (New) The method of claim 24 wherein each TCAM entry has a match cell

2 that contains the complete match, the partial match or the mismatch pattern.